BOARD AGE AND GENDER DIVERSITY: A TEST OF COMPETING LINEAR AND CURVILINEAR PREDICTIONS

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ABSTRACT

We test competing linear and curvilinear predictions between board diversity and performance. The predictions were tested using archival data on 288 organizations listed on the Australian Securities Exchange. The findings provide additional evidence on the business case for board gender diversity and refine the business case for board age diversity.

INTRODUCTION

Recent changes in corporate governance laws, rules and regulations on board composition have catalyzed a discussion on board demographic diversity (Schwartz-Ziv, 2012). The recent push initiatives have improved board diversity in the last few years (Australian Institute of Company Directors, 2012). Board diversity can experience further sustained improvements if there is also a pull factor in place – evidence that diversity brings economic returns (the business case for diversity). Several empirical studies have been conducted over the last decade to examine the business case for various forms of demographic diversity in corporate boards. The focus of that body of literature has been mainly on board gender diversity (for a review, see Rhode & Packel, 2010; Simpson, Carter, & D'Souza, 2010; Terjesen, Sealy, & Singh, 2009), with limited research on age or other forms of demographic diversity. The findings of that body of research have been inconsistent and thus fail to provide a convincing business case for board demographic diversity. The inconsistent findings suggest that future research should focus on sophisticated models (van Knippenberg, Dawson, West, & Homan, 2011) such as curvilinear predictions with reverse causality tests (Ali, Kulik, & Metz, 2011). This study presents a positive linear diversity-performance prediction using resource dependence theory (Pfeffer & Salancik, 1978), a negative linear prediction based on social identity theory (Tajfel, 1978), and an inverted U-shaped curvilinear prediction based on the integration of resource dependency theory with social identity theory. We test these predictions using archival data on board diversity (age and gender) and performance (employee productivity and return on assets) of companies listed on the Australian Securities Exchange.

COMPETING LINEAR AND CURVILINEAR PREDICTIONS

Positive Linear Prediction

Resource dependence theory states that the external environment of an organization influences the organization's performance (Pfeffer & Salancik, 1978). Organizations within a context are dependent on one another and other entities in that context. For organizations to be successful, the organization's managers and directors must develop links with these entities that reduce the dependency and enable the organization to obtain needed resources (Hillman, Shropshire, & Cannella, 2007).

Organizations need to have a diverse board due to the important functions the board serves. First, a diverse board facilitates organizational decision-making processes by providing valuable and unique information (e.g., Hillman, Cannella, & Paetzold, 2000; Hillman, Cannella Jr, & Harris, 2002; Hillman & Dalziel, 2003; Hillman, Withers, & Collins, 2009; van der Walt & Ingley, 2003). Younger directors tend to be better educated (Hatfield, 2002), are more creative and flexible (Beaver & Hutchings, 2005), and have better learning capabilities of new concepts and technologies (Jhunjhunwala & Mishra, 2012), whereas older directors are equipped with valuable experience and strong and wide social networks (Jhunjhunwala & Mishra, 2012; Li, Chu, Lam, & Liao, 2011). Similarly, male and female directors from different backgrounds also possess different sets of skills, knowledge, and perspectives, which contribute to higher levels of creativity and innovation (Taylor & Greve, 2006) and higher quality decisions (Rogelberg & Rumery, 1996).

Second, board diversity helps create linkages with important constituent groups. An organization may reduce uncertainties and dependencies by developing ties with external entities (Pfeffer & Salancik, 1978). Due to their accumulated years of working within the same industry, older directors are likely to have stronger ties with other organizations; younger directors are likely to understand the needs of a youth market. Due to their psychological differences (Deaux, 1985; Martin, 2004), male and female directors are likely to understand the unique needs of male and female clients (Ali, Kulik, & Metz, 2011). Research suggests that certain information can only be provided by female (and not male) directors (Natividad, 2005). By including female directors, organizations are better able to address the needs of female stakeholders – female clients, female customers and female job applicants (Hillman, et al., 2009).

Third, a diverse board signals the organization's commitment to diversity which may lead to greater attraction and retention of individuals from diverse backgrounds (Spence, 1973). Young job applicants may be more attracted to organizations that have a board with younger directors, because such board signals that the organization values the contributions of its young members. Similarly, the presence of female directors signals growth and advancement opportunities for women within the organization (Milliken & Martins, 1996), which inspires lower-level female workers (Mattis, 1993).

In sum, diverse boards increase information, expand networks, and engage talent – helping organizations to become more productive and more financially successful. Past research demonstrated a positive link between board diversity and financial performance (e.g., Campbell and Minguez-Vera, 2008; Mahadeo et al., 2012). Thus, it is proposed:

> *Hypothesis 1: There will be a positive relationship between board diversity (age and gender) and organizational performance.*

Negative Linear Prediction

Social identity theory (Tajfel, 1978) suggests that individuals tend to use demographic attributes, such as age and gender, to categorize self and others into social groups. In order for individuals to maintain a positive self-identity, they maximize the differences between in-group members (similar others) and out-group members (dissimilar others). As a result of self-categorization processes (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), individuals tend to engage in behaviors that may impede between-group functioning, such as stereotyping and anxiety (Loden & Rosener, 1991; Van Knippenberg & Schippers, 2007). Some empirical research suggested that members of a diverse group are more likely to experience dissatisfaction and conflict, experience less cohesion, engage in less cooperation and communication, and are more likely to leave the group (Chatman & Flynn, 2001; Jehn, Northcraft, & Neale, 1999; Pelled, 1996; Shapcott, Carron, Burke, Bradshaw, & Estabrooks, 2006; Triandis, Kurowski, & Gelfand, 1994).

Consistent with social identity theory, boards that are diverse in terms of age or gender are more likely to create in-groups and out-groups, and develop "us vs. them" perceptions among its members (Brown & Turner, 1981). For instance, older (or younger) directors are more likely to interact with other workers in the same age group, believing that same-age group individuals are easier to interact with and share the same values and expectations. In contrast, out-group members are perceived as less trustworthy, dishonest, and less cooperative (Brewer, 1979).

With the positive bias toward one's own group and negative attitudes toward the out-group, directors of different backgrounds are less likely to communicate with one another and more likely to leave the group (Jehn, et al., 1999; O'Reilly, Snyder, & Boothe, 1993; Riordan & Shore, 1997). Unpleasant and unconstructive communication among directors is less likely to provide meaningful resources to the organization (e.g., improved decision-making) and thus board diversity can negatively influence the organization's overall performance. Empirical evidence suggested that high board gender diversity results in low Tobin's Q and return on assets (Adams & Ferreira, 2009) and higher organizational age diversity leads to lower performance (Kunze et al., (2011). Thus, it is proposed:

> *Hypothesis 2: There will be a negative relationship between board diversity (age and gender) and organizational performance.*

An Integration: Curvilinear Prediction

Integrating resource dependence theory (Pfeffer & Salancik, 1978) with social identity theories (Tajfel, 1978), we propose an inverted U-shaped curvilinear relationship between board diversity and organizational performance. The theoretical integration suggests that the impact of diversity on outcomes depends on the *level* of diversity (Ali, et al., 2011; Richard, Kochan, & McMillan-Capehart, 2002; Richard, Murthi, & Ismail, 2007).

In line with resource dependence theory, organizations that have a homogenous board of directors may display low performance because of a lack of broad portfolio of skills and expertise. In a homogeneous board, social networks are constrained (Hillman, et al., 2000; Hillman, et al., 2002; Hillman & Dalziel, 2003; Hillman, et al., 2009), leading to narrow ties with external constituents. However, as diversity increases, access to resources and information increases. At low levels of diversity, minority members have greater opportunities to interact

with the majority members (Blau, 1977). Frequent contact may lead to improved problem-solving and creativity, resulting in improved organizational performance (Ali, et al., 2011).

However, with further increase in diversity, members of a moderately diverse board (e.g., 25% young directors or women directors) are likely to categorize themselves and others based on demographic attributes (Lau & Murnighan, 1998). Consistent with social identity theory (Tajfel, 1978), board members are likely to perceive demographically similar others as superior to demographically dissimilar others. As a result of psychological categorization, directors on a diverse board are likely to engage in less intergroup communication (Kravitz, 2003) and more intergroup conflict (Pelled, 1996). From moderate to high levels of diversity (i.e. 25-50% young directors or women directors), the adverse effects of diversity intensify due to the increasingly salient categorizations (Ali et al., 2011). The high representation of young directors or women directors may create a sense of threat among the majority directors (older/male), which will then generate greater competition (Blalock, 1967) and inter-group conflict (Williams, 1947). The increased competition and conflict may lead to poor performance.

In sum, the effect of board diversity on organizational performance is largely dependent on the level of diversity: at low to moderate levels of diversity, diversity will be beneficial, but at moderate to high levels of diversity, diversity will be detrimental. No prior research investigated a curvilinear relationship between board diversity and performance. However, past research found an inverted U-shaped curvilinear relationship between organizational gender diversity and employee productivity (Ali et al., 2011). Thus, it is proposed:

> *Hypothesis 3: There will be an inverted U-shaped relationship between board diversity (age and gender) and organizational performance.*

METHODS

We used archival data to test the competing linear predictions and the curvilinear prediction between board diversity (age and gender) and performance (employee productivity and return on assets), with a one-year time lag between diversity (2011) and performance (2012).

Sample and Data Collection

The population of this research comprises for-profit large organizations across nine industries in Australia. The initial sample comprised 2164 organizations listed on the Australian Securities Exchange (ASX) in October 2012. Four hundred and forty-six organizations with over 100 employees were selected for this research (e.g., Wang & Clift, 2009). Missing data on board member age reduced the sample size to a final sample of 288 organizations. Data on age and gender diversity for 2011 (obtained from the Orbis database) were matched with data on employee productivity for 2012 (data on operating revenue were obtained from the Osiris database and data on number of employees were obtained from the DatAnalysis database) and return on assets for 2012 (obtained from the Osiris database). Data on control variables were obtained as follows: organization size (DatAnalysis), organization age (Osiris), organization type in terms of holding/subsidiary or stand-alone (OneSource), and industry type (ASX website).

Measures

Outcome. Organizational performance was measured using objective performance measures of employee productivity and return on assets (e.g., Mahadeo et al., 2012; Shrader et al., 1997).

Predictor. Age diversity was calculated using the coefficient of variation formula. Gender diversity was calculated using Blau's index of heterogeneity for categorical variables (Blau, 1977).

Controls. The analyses controlled for the effects of organization size (total number of employees), organization age (number of years since the organization was founded), organization type (holding companies/subsidiaries vs. stand-alone), and industry type (nine industry groups of the sample organizations were categorized into services and manufacturing) on performance.

RESULTS

We used hierarchical multiple regression to test the hypotheses. The results partially supported Hypotheses 1, 2 and 3.

Gender diversity had a significant positive effect (β = .12, p < .05) only on employee productivity. Age diversity had a significant negative effect (β = -.18, p < .01) only on return on assets. The polynomial term gender diversity^2 did not have a significant effect on both employee productivity and return on assets. Age diversity^2 had a significant negative effect (β = -.22, p < .05) only on return on assets and accounted for an additional three percent of variance in return on assets. The negative sign of the coefficient for age diversity^2 indicates that there was an inverted U-shaped relationship between age diversity and return on assets. The inverted U-shaped curvilinear relationship was weakly positive at low levels of age diversity.

DISCUSSION

The main objectives of testing competing linear and curvilinear predictions on the impact of board diversity (age and gender) on multiple measures of performance (employee productivity and return on assets), with a one-year time lag between diversity and performance, were: (1) to provide additional evidence on the relationship between board diversity (age and gender) and performance; and (2) to perform a rigorous test of the curvilinear relationship between both board age and gender diversity and performance that may reconcile some of the inconsistent findings of past research.

The results indicate a positive linear relationship between board gender diversity and employee productivity. The findings support resource dependence theory (Pfeffer & Salancik, 1978) and suggest that a gender balanced board enjoys a mix of resources that can help improve the operating revenue of an organization leading to high employee productivity. Keeping all other variables at their mean values, employee productivity increased by $23,200 (on average) with every five point increase in gender diversity on Blau's index (e.g., from .10 to .15). The findings show a negative linear relationship between age diversity and return on assets. The results support social identity theory (Tajfel, 1978) and indicate that age diversity can lead to psychological groups of younger board directors and older board directors triggering the negative group behaviors. With every five-point increase in board age diversity (e.g. from .05 to .10 on

coefficient of variation), return on assets decreased by an average of 3.75, keeping all other variables studied at their mean values.

The findings of this research suggest an inverted U-shaped curvilinear relationship between age diversity and return on assets. The squared age diversity term refined the previously discussed negative board age diversity-return on assets relationship. The relationship was positive from homogeneity to low levels of age diversity (return on assets increased from -.22 at .00 level of age diversity to 4.76 at .10 age diversity) and then negative from low to high levels of age diversity (return on assets decreased from 4.76 at .10 age diversity to -59.42 at .45 age diversity). With strong theoretical arguments and a rigorous test of the curvilinear relationship, we were able to demonstrate that the most desirable level of age diversity is relatively low (about 10-15% younger members).

This study's findings have several theoretical and research implications. First, the findings provide indirect support to resource dependence theory (Pfeffer & Salancik, 1978) and social identity theory (Tajfel, 1978). Second, this research also provides indirect support to the integration of resource dependence theory (Pfeffer & Salancik, 1978) with social identity theory (Tajfel, 1978). This suggests that the impact of age diversity on performance may vary at different levels of diversity. Third, this research fills important gaps in diversity literature. It strengthens the business case for board gender diversity by providing the first evidence for the impact of board gender diversity on employee productivity. It also adds to the small body of research that investigated the impact of board age diversity on performance. Moreover, it provides pioneering evidence for a curvilinear relationship between board age diversity and return on assets. Furthermore, the curvilinear relationship found in this research can help reconcile some of the inconsistent findings of past research on board age diversity. For instance, the non-significant findings pertaining to the age diversity-performance relationship (Bonn, 2004; Bonn et al., 2004; Jhunjhunwala & Mishra, 2012) may be attributed to the lack of focus on the curvilinear relationship – the scholars did not include a squared age diversity term in their regression analyses.

The findings of this research have important implications for board directors and human resource managers. Adding a couple of young directors to an older board will lead to an optimal level of age diversity and produce higher return on assets. But managers and current directors need to be watchful that excessive levels of age diversity might reflect insufficient experience and ultimately lower return on assets. Moreover, this research suggests that new appointments that bring a board's gender proportions closer to 50/50 increases productivity levels. The findings related to positive linear effects on productivity will help practitioners to overcome some of the challenges and barriers in achieving board gender diversity, such as resistance to female appointments (Rhode & Packel, 2010) and beliefs that high representations of women will deteriorate board quality (Grosvold, Brammer, & Rayton, 2007). The results also weaken the argument that having only one or two female directors does not benefit the organization (Konrad, Kramer, & Erkut, 2008; Torchia, Calabrò, & Huse, 2011).

This study has two main limitations. First, the study design did not allow us to make strong inferences regarding the causal effect of board diversity on performance. Second, we could not take into account the impact of ethnic/racial diversity of board directors on performance.

REFERENCES AVAILABLE FROM THE FIRST AUTHOR